

# THE CRUSHED STONE JOURNAL

*Official Publication*  
The National Crushed Stone Association

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Association Activities

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The New Headquarters of the Association

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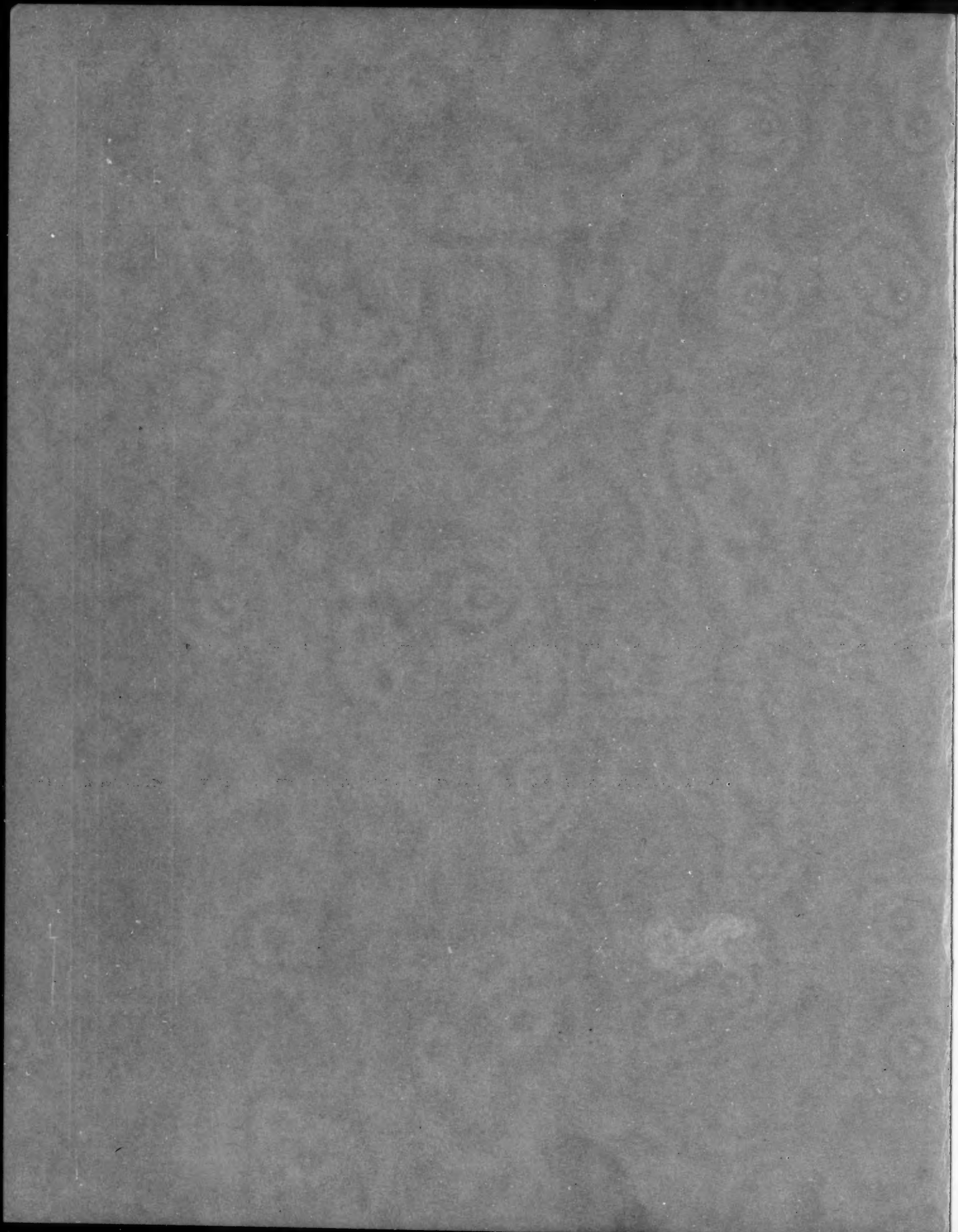
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APRIL, 1928



# The CRUSHED STONE JOURNAL

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## Tendencies of the Government to Absorb Association Activities<sup>1</sup>

By W. D. JAMIESON

IT WOULD be presumptuous almost to the extent of impudence for one not skilled or learned in the various arts and professions and sciences which you represent to come before you with suggestions as to the details or technicalities of your particular activities. But it's a long ways from presumption for one who has had no small amount of contact and experience in a rough and tumble way with the various branches and departments of our government to give you warning that if you don't wake up and get on your jobs as associations, this same government will take a hand in your affairs, if your affairs are of sufficient importance to affect the great mass of the people, or of large communities of the people.

And when the government does take such a hand in your business or your profession, you are apt to find it expensive, embarrassing, limiting, and maybe humiliating.

### **Either Voluntary or Governmental Supervision Certain**

In this day of increased efficiency and of higher ethics in all lines, one of two things is certain: either you will control yourselves voluntarily along lines of increased effectiveness for the general good of society, or sooner or later the government will assume more and more direction and supervision of your affairs.

Your associations represent splendid scientific, professional and business activities. As long as you fully measure up to your opportunities and your responsibilities, there is little likelihood the government will seriously interfere with you, provided you are actively and intelligently on the job to prevent such interference.

Although you are voluntary in your organization,

yet you are a very definite part of the government. In fact, your organizations are practically an associate government. In approximately the proportion that you legislate for yourselves will you prevent the Federal Government from legislating for you.

### **Railroads Responsible for Restrictive Railroad Legislation**

Let me illustrate what I mean by the great business of railroad transportation. Probably there would have been no necessity at all for the Interstate Commerce Commission, with its burden of detail and expense and its lack of ability to respond easily and quickly to the needs of the railroads, I say there probably would have been no necessity for this Interstate Commerce Commission at all if the railroads themselves, through their various associations, had done the voluntary legislating for themselves instead of passing this duty over to the Federal Congress, which knows so little about the railroad business, and what is required of the roads for the public good.

The railroads themselves are responsible for the great bulk of the restrictive legislation and for their ultra strict supervision by this Interstate Commerce Commission on two accounts: first, because of their failure to compel themselves to render equal and fair service as between shippers and consumers, commodities and communities; and second, because of the abuses which they permitted and practiced. If the railroads had had, forty years ago, the very splendid associations which are so effective at this time, with authority to act, and with their fine vision, I doubt if there would be any Interstate Commerce Commission today. I am very sure there would have been less overhead and operating expense, lower rates with larger net earnings, and probably better transportation facilities.

This railroad situation illustrates the very point.

<sup>1</sup>An address delivered at the Sixth Annual Meeting of the Conference of American Executives held at the Washington Hotel, Washington, D. C., March 9, 1928.

The railroads now find themselves in a straight-jacket because of the governmental legislation which has been forced upon them. Their ineffectiveness to legislate voluntarily brought about the protective associations, the Grange, and the various other shippers' organizations. These societies were developed for the purpose of influencing legislation to compel the railroads to do the very things which the railroads should have done voluntarily. Having allowed the matter to go into governmental channels, the railroads now find their freedom largely taken away from them. If your officers and directors follow the same course the railroads followed they may easily find themselves similarly hampered.

### **Radio Situation Illustrates Necessity for Legislation**

The radio situation is another case in point. It is a new industry, or art, or whatever it is, and the broadcasters had things in their own hands. If they had voluntarily legislated with the motive of public service they would still be free and independently effective. But they did not see their way clear to legislate voluntarily and the natural result is that today, this very day, there is grinding through the legislative mill up in the House, a law which promises to be harmfully restrictive.

### **Two Distinctions Between Governmental and Voluntary Regulation**

There are two very marked distinctions between the hard and fast legislation of the government, and your own voluntary association legislation. The first is that the government can legislate with definite authority, while you have been unable adequately to assert yourselves in the past. Your members may go to the Congress and make all kinds of pleas and all kinds of showings at the hearings, and lay down vigorous and well founded protests, but when the law is passed there is nothing for them to do except to obey it. If you could have this same sort of authority in your associations, I can see how you would practically obviate the necessity for added Federal legislation for your control.

The second marked and serious difference, and which should give you pause, is that the hard and fast legislation of Congress is legislation by politicians who are thinking more largely in terms of the next election than anything else, while your voluntary legislation comes from men who are trained and efficient experts.

Further, the administration agencies set up by the Federal government to regulate and control your vari-

ous scientific, professional, and business activities are composed of men who know practically nothing about your business which they may be called upon to regulate. In fact, in many of these Commissions a man who knows much about the business is prohibited from membership. A railroad man has no opportunity of being appointed Interstate Commerce Commissioner. The very latest appointee, a good friend of mine and from my own home state, is a good lawyer, has run for all kinds of offices out in Iowa, and was appointed because he was a politician.

Look at the make-up of your Federal Trade Commission. What technical or efficient expert judgments can you hope for, in any of your associations, from that tribunal which has such tremendous power in its effect on public opinion?

### **Importance of Control by Men Who Know**

As I have thought about the tendency of the government to absorb more and more your legitimate association activities, I have been increasingly impressed with the importance of this matter to you and to the membership of the organizations you represent. It is also of vital importance to every man, woman, and child of the United States.

Every morning before breakfast I like to read something substantial and solid. It starts the day off a lot better—it's a kind of a mental bath. Three or four mornings ago I was reading Will Durant's great book, "The Story of Philosophy." At that particular time I was reading about Francis Bacon, who uttered this statement, "that the dream of every thinker is to replace the politician by the scientist." I take it that you are all scientists in your professions or in your businesses. I believe you are men of vision in your association work.

Can you picture the splendid development that would follow if you men, and the others like you, were given free reign, within reasonable limits, to legislate along the lines of your expert knowledge? You can scarcely realize what it would be possible for you to do in reducing the cost of production, in increasing the quality and efficiency of service, and in the measure of benefit you would be to society.

### **Why Can't Associations Do It?**

I am bringing this great matter to your attention in a simple way. How I wish I could challenge your thought so as to give you an added idea or a new inspiration to accomplish this desired end. Doubtless, you are among the best equipped and the most capable of the men of this age for charting the course which

all of the membership of your associations should pursue in order to bring the greatest good to the people.

What are the stumbling blocks in your way? I wonder if you aren't handicapped and in some instances hamstrung by officers and directors or little men engaged in the pursuits which you represent? Is it possible that the real problem for you is one of salesmanship? Are you either lacking in the ability or have you failed to study this phase of your problem? To put this thing over you must sell it to your membership, and in many instances it must be sold to the public and to the legislative and administrative branches of the government.

### **Indifference of Association Members Responsible**

I have had limited experience in association work and I know how difficult it is to get members to appreciate their duties and their opportunities. If there is a chance for one to get the spotlight by making an address or something of that sort, he is glad to do it. But when it comes to buckling right down to hard business, yielding an individual judgment or advantage for the benefit of the whole of a class, personal selfishness, ambition, jealousy are liable to creep in. I know in one of my associations, of manufacturers, it was almost impossible to get them to give serious consideration even to installing a cost system. Some of them were good business men, too. Incidentally, the successful ones were those who did have the definite cost system that told without fear or favor the facts of their production expense.

### **Too Many Associations**

I am inclined to believe there are entirely too many associations. I was looking at the little book gotten out by the Department of Commerce a couple of years ago and at that time there were 9,000 organizations; 1,199 interstate, national, and international, 1,130 state, and 6,449 local organizations. Can't you get your officers, or your directors, or your principals to see that things are entirely over-organized? That when they start a new organization on each possible excuse they are spreading themselves out entirely too thin to do effective work? Can't you get them to realize the benefit both to themselves and to the people as a whole if they are willing to make some sacrifice of individual judgment or convenience? Can't you make them see in the end that they will be winners?

### **Government Will Regulate if Associations Don't**

Can't you get them to realize that this government of ours is an ineffective, a slow-moving, a cumbersome,

awkward old machine but that it will get them after a while if they don't watch out; like God's mill, it grinds slow but sure? Can't you get them to profit by the experiences of the past with this powerful governmental machine? You can lay it down for them as a definitely safe proposition that if a thing they are doing is not good for the public it is not good for their business, and if a thing they are failing to do is a detriment to the public it is a detriment to their business. You know what these things are.

Mark this, if your association fails to have your line of business or your profession quit doing what it should not do, or if it fails to have it begin doing what it should do, then sooner or later this government will begin absorbing your legitimate activities. And when it once takes hold you can scarcely ever make it let loose.

### **Banking Business Illustrates How Government Has Been Compelled to Regulate**

Can't you get your people to realize the best guide for the future is the experience of the past? Look at just a few of the association activities which the government has been compelled to absorb. When the banking business in this country first started it was a simple little affair but it fed on its own power to such an extent and was so completely blinded as to its possibilities for service that the government was compelled to apply strict regulation and to adopt the Federal Reserve system. While the banks now have a wonderfully efficient organization, yet they are tied down to the minutest detail by the governmental control.

How fine it would have been if the bankers themselves could have seen that such a plan as the Federal Reserve system would prove to be the salvation for the safe extension of credits, even sufficient to finance a great war. Now they are hampered by many and inelastic laws, the details of which prove at times exasperating and harsh. Men, can't you use this to show your officers or directors or principals what will likely happen to them if they don't follow your suggestions for voluntary legislation?

### **Prohibition Another Case in Point**

In this year of presidential campaign we hear a lot about prohibition. There would have been no prohibition issue this year if the men engaged in the liquor and beer businesses had followed the plan suggested to you. How enjoyable it would be, doubtless, to some of you if, when you go to your dinners tonight, you could have your wine, or your cocktail, or your highball. Maybe some of you would like to put your foot on the

brass rail. Why can't you do it? Because the liquor and beer businesses so failed to legislate properly and voluntarily for themselves that the government was compelled to step in. Prohibition is simply an absorption of association activities by the government, carried to an extreme.

The other side of this picture is that Prohibition is also in part the result of the activities of the powerful and effective Anti-Saloon League and the other Temperance Organizations, local and national. Now we have the condition of these two opposing forces, the Anti-Saloon League and its allies on the one side, and the societies against the 18th Amendment and their allies on the other side, exerting all the influences they possibly can, the one to continue Prohibition and the other to abrogate it.

The Federal Trade Commission is a living monument to the government's being compelled to absorb association activities because certain officers and directors and men in business failed to follow the lines of voluntary legislation which were visioned by experts in those lines, such as you are in your lines.

### Department of Commerce Stage Setting Not Necessary

Can't you picture to the officers and the directors and the membership generally the ridiculousness of having the Department of Commerce get back of the various propositions which are wholly your own affairs? They give out to the world commercial and engineering standards which have already been worked out by you and which should be put into execution voluntarily by the engineering and commercial societies themselves. Why do you need the stage setting, the scenery of the Department of Commerce to put over the very things which are in your realm?

A friend of mine was visiting not long ago with the local manager of a large national commercial concern. He had employed an efficiency expert and then he told the efficiency expert what changes and improvements and reforms he wanted in his own business set-up here. The expert couched these suggestions beautifully in his report to the head office, and because of the stage setting of this expert these changes, which had been advocated by the local manager time and time again, were accepted and adopted as something new and worth while.

The stage setting of the Department of Commerce is not only a reflection upon you and your membership but it is creating a super-government which is bound sooner or later to grow arrogant and harmful.

### Government Tenacious To Hold On When It Once Starts

Tell them about Champ Clark's Missouri sow. They had pretty nearly to pull her ears off to get her to the trough—then they almost had to pull her tail off to get her away from it. The Federal Government may allow a lot of abuses and it may be slow in starting the processes of correction, but can't you point out to your people that when the government once does get started it will be most tenacious and expensively annoying in its handicapping and restricting efforts?

### Astonishing Number of Bills Introduced in Congress

Don't forget that individual members of the Senate and the House are searching around with spy glasses to find some excuse for offering a new bill. If they can find anything lacking in your voluntary legislation where you have failed to measure up either on the basis of omission or of commission, these members are ready to introduce a bill about it. How many bills do you suppose have been introduced in this new Congress this session? I called up yesterday to find out. There were 11,884 in the House and 3,555 in the Senate.

### Washington Representation Needed

I am glad to see so many Washington representatives of your organizations here. I believe in Washington representation. In order that you may accomplish your end most effectively, I think there must be team work. The work that you who are away from Washington do to sell the ideas to the membership all over the country, and to the people, coupled up with the work that the Washington representative does in selling the splendid benefits that will follow from the working out of your ideas and your ideals, selling this to the legislative and to the administrative branches of this great government is the most effective kind of work for you. I believe every association can get benefit almost beyond measure from proper and effective Washington representation.

The situation of our friend, Mr. Bullock, Secretary of your conference, illustrates the necessity for such Washington representation. His particular association is kept constantly on edge because one of the government departments, the Bureau of Standards, under the Department of Commerce, has set about to have the metric system of weights and measures adopted in this country. Even now they have bills pending in

Congress, introduced during this session, for this very purpose.

The other side of this picture is that the American Metric Association in advocating the metric system of weights and measures, has the support of some of the scientific, professional, and business people of the country.

These two associations, the American Metric Association on the one hand and the American Institute of Weights and Measures on the other, constitute an example of those associations which necessarily must deal constantly with the legislative branch of the government. The one can have no hope of the metric system being adopted in this country without the enactment of legislation by Congress, and the other must defend, before Congress, the existing system in order to prevent its being supplanted by the metric.

### **Membership Should Work Unitedly and Give Associations Power to Act**

How I wish I were able to say the thing or to do the thing that would challenge the attention of your membership for you, so that they would get right behind you with authority and with power, that you can put into operation the splendid things which I know you vision. If they have sense enough to do this, they will enable you and your associations to stay out of the confinement of governmental absorption of your activities. A friend of mine was telling me yesterday of Elbert Hubbard's visiting an insane asylum where there were a bunch of 25 or 30 inmates out in the yard, with the gate open, and only one guard. He said to the guard, "Man, don't you know if these fellows would get together they could overpower you and walk right out to their freedom?" His reply was, "If they had sense enough to get together they wouldn't be in here." How I hope your membership may demonstrate that they have sense enough to get together, give you the power and the authority which in all reason belong to you, and voluntarily do the things which, otherwise, the government will sooner or later do, to their expense, detriment, discomfort, and dismay.

### **When Government Regulation Has Begun Then Intense Cooperation Is Necessary**

If the government has already begun to regulate some phase of your business, or if, in the future, it does attempt such regulation, then there is only one course for you to follow—cooperate with the departments of the government and with the Congress to

the fullest possible extent. This cooperation should be constant, and should include the giving of minute data to the administrative and legislative branches, with carefully thought-out suggestions as to policies to be pursued, in order that you may have the maximum of freedom in working out your own salvation, and in bringing that degree of service to the public of which you are so finely capable.

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## **Big Year in Road Building**

Road construction in 1928 will at least equal and probably slightly exceed the highest mark recorded in any preceding year, according to reports received by the Bureau of Public Roads of the United States Department of Agriculture and made public by the bureau.

Improvement of the State and Federal-aid highway systems under the supervision of the highway departments of the several States will go forward during the season now opening with a construction of more than 20,000 miles of surfaced roads and about 8,000 miles graded and drained.

The State reports also indicate that at least 240,000 miles of the total of 288,000 in the State highway systems will be maintained this year under the supervision of the State highway departments, a fact which should insure the traveling public a high degree of road service.

Funds estimated as available for expenditure during the year by the State highway departments are about 25 per cent greater in total amount than similar estimates indicated at the beginning of last season. Although it is not possible, so early in the season, to anticipate closely the yield of gasoline and motor vehicle taxes and other sources of revenue it is practically certain that the funds available to all State highway departments for construction and maintenance of roads and bridges will exceed \$750,000,000, and local revenues, expendable by county and local authorities, will swell the highway total to upwards of \$1,300,000,000.

Details are not available concerning the work to be done by county and local authorities. It is anticipated that the year's work under State supervision will result in the construction of nearly 9,000 miles of hard-surfaced pavements, upwards of 12,000 miles of less expensive surfaced roads, and 8,000 miles of roads adequately graded and drained.

## The New Headquarters of the Association

May first will mark the beginning of a new epoch in the affairs of The National Crushed Stone Association. On that date our offices will be moved from the Earle Building to the Merchandise Building, located at Fourteenth and S Streets, N. W., in Washington. The activities of the Association at that time will be greatly enlarged in scope by the addition of laboratory facilities for carrying on research work which ultimately should be beneficial to all crushed stone users as well as producers.

The main purpose of our present change of location is to permit of keeping our offices and laboratory together. This will be advantageous in a number of ways, among which may be mentioned, (1) a great saving in time on the part of the Director of the Bureau of Engineering, (2) the possibility of his keeping in constant contact with the laboratory, which would be impracticable were the offices and laboratory in different parts of the city, (3) the more effective use of our clerical force for the clerical portion of our laboratory work. In our new location we shall effect considerable economy in rent, because we shall no longer be located in the heart of the business district and, moreover, we have gained additional office space for both the Secretary's office and the Bureau of Engineering. So economical is our new location that we are obtaining our entire laboratory and office space combined, totaling almost 4000 square feet, which is approximately six times our present space, for only a few hundred dollars more per year than our present office rent.

The Merchandise Building, for the most part, is a very old, but well-constructed structure, and many years ago, from October, 1866, to July, 1875, it was occupied by the State Department of the Federal Government. It has been purchased by a storage company and there has been added to it a new reinforced concrete front of very attractive appearance.

Our offices and the main portion of our laboratory will be located on the second floor of the new part of the building, and, in addition, we shall have several rooms in the basement in which the more dusty and more noisy portion of the testing will be performed. The general appearance of the building as well as the layout of the offices and laboratory is shown in Figure 1. The offices will be occupied by the clerical force, the Secretary, the Director of the Bureau of Engineering and the Laboratory Engineer. Because of the low

rates at which we at present are able to obtain our new headquarters, we deem it advisable to procure ample space for reasonable future expansion in our activities.

In the laboratory on the second floor there will be installed a testing machine of unusual design, having a capacity of 300,000 pounds in compression, 60,000 pounds in tension, and capable of making transverse tests of large or small beams. This machine has been designed for our particular needs and we expect it to be delivered on June first. It will be used for compression, transverse, and tension tests on concrete and special tools are now being designed and built for this work. They are aimed at securing the greatest possible accuracy and the elimination of uncertain factors. At the same time speed and convenience of testing have been kept in mind, for these elements are especially essential because of our small laboratory force.

Other equipment in the laboratory will include complete cement and mortar testing apparatus, involving a storage tank and moist closet cabinet to be arranged for maintaining constant temperature and the highest possible humidity. A briquet machine of the shot type of 1000-pounds capacity will be used for tension tests of mortar.

Complete laboratory screening apparatus and rock testing equipment for determining the physical properties of rock, including a four-cylinder Deval abrasion machine and perhaps other machines, such as the standard toughness and hardness devices will be included. It is also proposed to install apparatus for making freezing and thawing tests. A special repeated load testing machine will probably be built during the year for making repeated bending tests on concrete. Bituminous mixtures will also be investigated for their stability and other properties. Obviously, however, it will be impracticable to initiate all of these investigations simultaneously.

The basement space in the older portion of the building, although not ideally subdivided, still is very desirable laboratory space. The floor of the basement is only a few feet below the street level and consequently we shall have daylight in every outside room. Some of our investigations on concrete will require the use of large samples of coarse aggregates, weighing perhaps two tons, and there may be as many as 10 or 15 such samples under test simultaneously. Consequently, we have made provision for the storage of a large amount

of material. Upon its receipt in the laboratory, each sample must be prepared by screening it to a given size and complete crushing and screening equipment is being installed for this purpose. The storage, screening work and concrete mixing will be done in rooms 7, 9 and 11. The specimens will be cured and stored in room 12. This room, selected as a moist room because of its interior location and heavy wall construction, will be fitted with special fog sprays and a thermostatically controlled regulator, so that the storage conditions will be as uniform as possible at all times. Every effort

is being made to create uniform conditions of testing by the installation of devices necessary for that purpose and, where needed, by the special design of apparatus to eliminate uncertainty.

In time there will be published a more detailed description of the work to be undertaken, the apparatus, and the methods employed, but at the present we merely wish to give some idea of our new office and laboratory space and of some of our facilities for performing research for the benefit of the crushed stone industry.

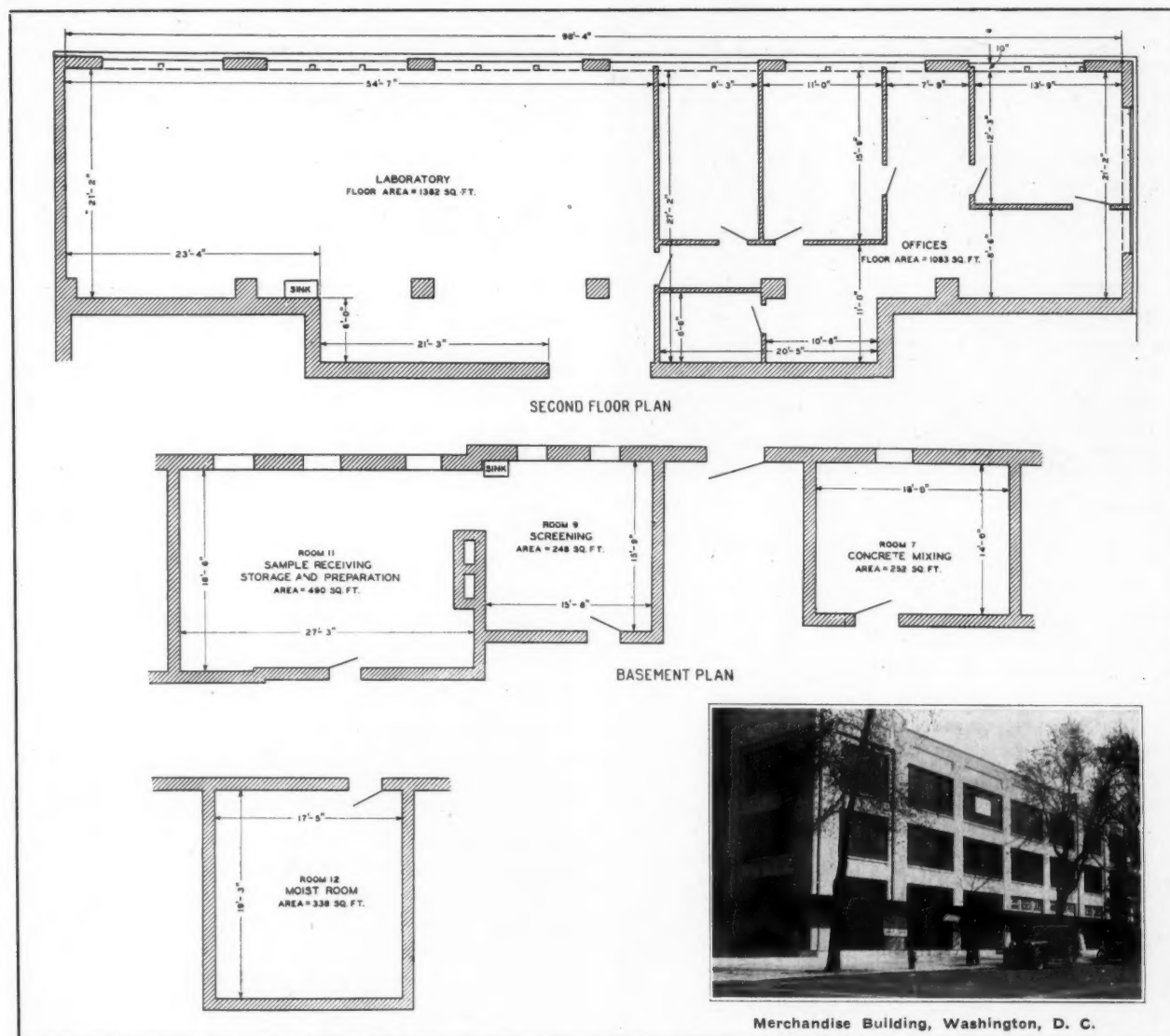


Fig. 1.—Offices and Laboratories of the National Crushed Stone Association, Merchandise Building, 14th and S Streets N. W., Washington, D. C.



JOSEPH E. GRAY

### Joseph E. Gray Joins Engineering Staff

It is with pleasure that the National Crushed Stone Association announces the addition to its headquarters staff of Joseph E. Gray, who will occupy the position of Laboratory Engineer in the new research testing laboratory to be established about May first as a part of the Bureau of Engineering.

Mr. Gray received his preliminary training in scientific research and laboratory technique in the Textile Section of the U. S. Bureau of Standards, where he was employed from 1921 to 1924.

At the close of 1924 he accepted a position in the physical testing laboratory of the Division of Tests of the U. S. Bureau of Public Roads.

Mr. Gray's experience with the Bureau of Public Roads has been unusually diversified, thus giving him an exceptional opportunity to familiarize himself with practically every phase of the highway construction field.

In addition to the testing of non-bituminous road materials and concrete while in the Division of Tests, he has also served as a Junior Highway Engineer in the Division of Construction and the Division of Control.

Mr. Gray was born in Washington, D. C., January 8, 1902, and received his engineering education at George Washington University from which he was graduated with the degree of Bachelor of Science in Civil Engineering.

In addition to Mr. Gray, there have been obtained to complete the laboratory personnel, Mr. Thomas P. Herrell as Laboratory Assistant and Mr. William B. Brown as Laboratory Helper. Mr. Herrell for the past 6 years has been engaged in the Division of Tests of the U. S. Bureau of Public Roads.

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### First-Quarter Construction Ahead of 1927

Construction contracts to the amount of \$592,567,000 were awarded last month in the 37 states east of the Rocky Mountains, according to F. W. Dodge Corporation. The above figure covers about 91 per cent of the total construction of the country. Last month's total was the highest monthly contract total on record for the 37 states since June 1927. There was an increase of 27 per cent over the total for February of this year, but there was a drop of 5 per cent from the March 1927 record.

Last month's record brought the total amount of new construction started since the first of this year in these states up to \$1,485,067,000, being an increase of 6 per cent over the amount started in the first quarter of last year. In addition to being ahead of last year's first quarter record it was the highest first quarter ever recorded for the 37 states.

Analysis of the March contract total showed the following important classes of work: \$275,191,600, or 46 per cent of all construction, for residential buildings; \$110,338,200, or 19 per cent, for public works and utilities; \$73,075,300, or 12 per cent, for commercial buildings; and \$33,881,000, or 6 per cent, for educational projects.

New work contemplated during the past month amounted to \$884,609,100. This figure was 7 per cent less than the amount reported in the preceding month and was 26 per cent under the contemplated record for March of last year.

## John T. Dyer Quarry Company Holds Safety Banquet

The 1928 Safety Campaign of The John T. Dyer Quarry Company began with an auspicious start with their first annual safety banquet held on March 22 at the Hotel Rockland, Monocacy Quarry, Pennsylvania.

This banquet marked the first of a series of meetings to be held throughout the year in the interest of accident prevention among the various plants of this organization.

Those in attendance included the personnel of the safety committees representing the employees of the three operations of the company located at their Monocacy Quarry, Trap Rock Quarry and Clingan Quarry in addition to the management and the honored guests of the evening.

At the conclusion of the dinner a business session was held with Wm. A. Kelly, Superintendent of the Monocacy plant acting as Chairman.

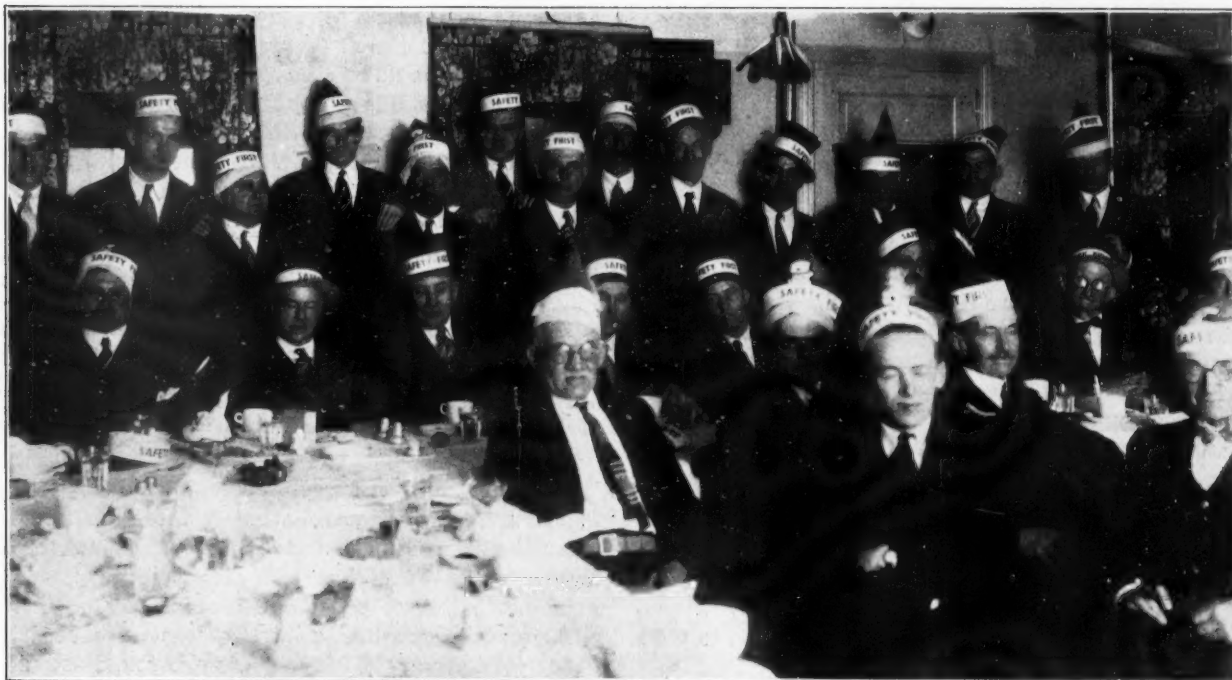
Thomas J. Quigley of the Pennsylvania Department of Labor and Industry, who was the principal speaker of the evening, laid stress upon the need for education as the vital means of bringing about a reduction in accidents. He reviewed the accident situation as it has

existed in the State of Pennsylvania over the last three years, placing particular emphasis upon the cause and effect of fatal and lost time accidents in the industries of Pennsylvania. In conclusion he pointed out the losses suffered by both employer and employee as a result of not giving to accident prevention work the serious attention which it merits.

F. T. Gucker, President and General Manager of the company, stated that the management was most heartily sympathetic toward the work of accident prevention and had full confidence that whatever was undertaken as a result of this meeting would be carried to a successful conclusion.

Short talks were also given by E. T. Wolf of E. I. du Pont de Nemours and Company and Earl Souders, Fred J. Sleevens, and A. H. Gumpert of The John T. Dyer Quarry Company.

The meeting was closed with an announcement that a bronze plaque, suitably engraved, would be awarded to the plant of the company obtaining the best safety record for the period April 1, 1928 to December 31, 1928.



In attendance at John T. Dyer Quarry Co. Safety Banquet

# The Field of Dry Ice in Modern Refrigeration<sup>1</sup>

By J. W. MARTIN, JR.

EDITOR'S NOTE: *As a number of our members are engaged in the production of lime and cement, it is believed that the following article will prove of interest. "Dry ice" as a modern refrigerant is just becoming known and it would seem that this field might offer excellent possibilities for the utilization of the waste product, CO<sub>2</sub>, produced in the course of manufacturing lime and cement.*

THAT "dry ice" (solid CO<sub>2</sub>) has become feasible for ordinary commercial refrigeration is a surprise to many. That the cold substance we all saw made in our school days by expanding liquid CO<sub>2</sub>, was anything more than a "stunt" product, was hardly dreamed of prior to 1925. For the past three years, however, this "ice" has been rapidly forging ahead into its own special section of the refrigeration field.

## Physical Properties

Dry ice is simply a solid or frozen form of pure carbon dioxide. This gas, well known in soda water and in bread making, may be liquefied at any temperature below 88° F., if sufficient pressure be applied, and may be frozen under pressure if the temperature be brought to about -69° F. If certain precautions are taken in the method of freezing, a colorless, translucent ice of about 1.56 sp. gr. can be obtained; by such methods the ice may be made more than 50% heavier than the liquid from which it is frozen.

Probably the most noticeable characteristic of solid CO<sub>2</sub> is its extremely low temperature, -109.3° F., at atmospheric pressure, surrounded by its own gas. Exposed to air, the diminution in partial pressure causes it to sublime at still lower temperatures,—often below -135°. These low temperatures, of course, condense and freeze all moisture that is brought in contact with the ice through the air, and cause the characteristic blanket of frost that forms on dry ice when displayed in the air.

The amount of heat that this new ice is capable of absorbing is, roughly, twice that absorbed in the melting water ice. The heats involved have been given as:

Latent heat of fusion	81.54 B.t.u.
Latent heat of vaporization	158.6 B.t.u.
Latent heat of sublimation	246.4 B.t.u.

<sup>1</sup>Presented before the 1927 annual meeting of the A. S. R. E. and reprinted from "Refrigerating Engineering," Vol. 15, No. 2, February, 1928.

<sup>2</sup>From Mass & Barnes (1926).

Adding to the heat of sublimation the sensible heat involved in raising the temperature from -109° to, say, +32°, we have a total heat absorptive power of 32° of about 285 B.t.u.

There are several characteristics of the CO<sub>2</sub> gas that come from the ice: It is an excellent insulator, ranking about twice as valuable as still air; having a low specific heat and carrying away little of the "cold" from the ice; it is relatively harmless and non-corrosive; it has a mildly inhibitive action on bacterial growth.

## History

Among the first to think of using solid CO<sub>2</sub> as a refrigerant was Landolt, back in 1884. Later, in 1894, Blackrod talked about it as an interesting possibility. The first who really seriously put his dreams on paper was Herbert Elworthy, a British subject residing in India. In 1895 he was apparently thinking up ways of producing solid CO<sub>2</sub>. The main reason for his desiring to use the solid rather than the liquid was that it could be transported readily into the less accessible portions of India. Elworthy's apparatus for producing his solid CO<sub>2</sub> was a bit unsound as to mechanical theory, and has recently been declared "inoperative." His statement that solid CO<sub>2</sub> would be used as a refrigerating medium sounds, however, like a prophecy. There seems to have been more thought given to producing solid CO<sub>2</sub> in India during the 90's than in any other country. This year a letter has been received from a British officer, also stationed in India, who says:

I have just read a very interesting article on the new commercial refrigerant. This article was peculiarly interesting to me for the reason that as far back as 1898 I prepared sticks of solid CO<sub>2</sub> and despatched them by post to an officer stationed at Mysore, who used them for preparing soda-water. The sticks were one inch in diameter and six inches long. Subsequently I carried out numerous experiments but no one would take a serious view of the possibilities involved, and merely looked upon my experiments as laboratory tricks . . .

There are many other references to solid CO<sub>2</sub> for refrigeration in the literature, but in these other references the solid is incidental, or even accidental, in an expansion type of refrigeration with liquid CO<sub>2</sub>.

In one field, however, solid CO<sub>2</sub> obtained a hold. As a therapeutic measure, solid CO<sub>2</sub> was introduced by Pusey (in Chicago) in 1905, and is still found useful in the treatment of cutaneous disease.

### Manufacture

There is little that is new in the art of producing liquid or gaseous carbon dioxide, and perusal of Goosmann's book on the subject, published in 1907, will bring one up to date, except for certain discoveries and improvements that are not yet ready to be published by the large producers.

The method of producing  $\text{CO}_2$  from the burning of coke is by far the most important, but other production methods are of interest. Among these other sources are:

1. Fermentation tubs.
2. Lime kilns.
3. Cement kilns.
4. Power house flue gases.
5. Blast furnace stoves.
6. Natural wells.
7. Chemical plants.

From whatever source the gas is obtained, the process is, in general, the same: first, purify the  $\text{CO}_2$ ; second, compress the gas to a liquid; third, expand the liquid to "snow," or freeze it directly without expansion.

In the production of solid  $\text{CO}_2$  from the liquid, two methods are employed: one which is used where flexibility of production is needed, consists of a double-walled tank of special construction set on scales. Liquid  $\text{CO}_2$  is expanded into the inner tank through a specially designed nozzle, and under suitable conditions, a remarkably high percentage of snow is obtained. The gas resulting from this sudden expansion and evaporation passes through a screen, often circulating between the walls of the tank and returning to the compressors to be liquefied again. The snow is shoveled from this tank at intervals into molds and pressed under hydraulic pressure to ten-inch cubes. The other method comprises expanding the liquid in a larger tank of special construction set above a press. In this apparatus the snow is fed into the press, tamped, and pressed automatically. There are several advantages in the automatic snow tank and press, and it is used where production warrants a large unit. Little can be said about the progress that has been made along these lines, as the data are not ready for publication. There are two points of great importance in manufacture: first, the purification of the  $\text{CO}_2$  and, second, the yields of snow from the liquid.

Dry-Ice is stored in well insulated pits, where evaporation is kept at a minimum, and is delivered, wrapped in paper, by means of well insulated trucks. A large quantity of the product is shipped by express daily in balsa-wood boxes which hold 200 to 1400 lb., and in

these the evaporation loss is less than 10% in 24 hrs.

### Why it Works

The question immediately arises in your minds, why was this product which was known for a generation never used commercially as a refrigerant? The answer is that as long as solid carbon dioxide was considered as refrigerating in the same manner that water ice refrigerates, that is, by contact or by convection air currents, it had little or no commercial value, for its heat removing qualities (its negative B.t.u. content, as it is sometimes called) are less than twice that of water ice. For this reason it remained a laboratory curiosity for many years, and its commercial use started only with the discovery and full realization of the value of the offcoming gas as a means of insulating the refrigerant and the product to be refrigerated.

It was found that this refrigerant possessed an ideal combination of a low temperature heat absorber and a cold surrounding atmosphere constantly sweeping outward with the evaporation of the ice, to prevent the refrigerated product from absorbing appreciable heat from the walls of the outside container. As a result of this discovery, dry ice can be used so, that with its collateral advantages, it is found many times as efficient as water ice. The discoverer of this method of refrigerating, ushered solid carbon dioxide from the laboratory into the shipping rooms of the manufacturers of perishable food products.

The commercial field for dry ice is not so much in the cooling of a product as in keeping it cold, either in some local storage or during shipment. For this reason it can readily be seen that dry ice is likely not to become so much a competitor of water ice, but rather a means toward broadening and enlarging the present field of refrigeration.

There are other distinct advantages and improvements that have been found of practical value. One is, the readiness with which we are able to control the temperature in the space to be refrigerated. Regulation of the amount of insulation around the dry ice, regulation control of the partial pressure on the dry ice, both offer possibilities of automatic, and also of thermostatic control.

Because of its absolute dryness and its concentration of refrigeration, one use that was perfected in various forms is that of the refrigeration of perishable products in cardboard cartons. Even so perishable a product as ice cream has been so shipped from New York to Hood River, Ore., with this refrigerant. Butter, fresh meat, fish, and even fruit are being shipped successfully with it.

Every one is familiar with the trend of the day towards packaged goods. The old fashioned butter tub is replaced by the box of pound and even  $\frac{1}{4}$  lb. package of butter; the side of bacon to the box of cut strips; the 5 gal. can of ice cream is slowly being replaced by the pint and quart package, and even these are cut up into individual portions. In this field of packaged perishables dry ice finds a unique place. The convenience, the cleanliness, the small weight and volume, the absence of moisture, add to its pre-cooling value and make it an ideal refrigerant for this class of perishables.

### Its Uses

It is in this field of transportation that solid  $\text{CO}_2$  development has progressed most rapidly. Ice cream, with its requirement of low temperature, was, of course, the first product to receive attention by the makers of dry ice. After less than three years of public use, the ice cream industry in New York and Philadelphia consumes several tons daily. For the ordinary overnight shipment of 5 gals. of ice cream a light single service can, a corrugated paper box, and about 7 or 8 lb. of dry ice are required. The carry-home package of ice cream, either cylindrical or cubical, is becoming a familiar sight in our groceries.

Dry ice for the ice cream manufacturer is serving to broaden his field. With water ice and salt the expense of delivery and the loss in tubs and cans were high. Before the advent of dry ice, shipments of about 8 hours' duration were the usual limit. Now, a Philadelphia manufacturer is shipping daily to Ohio and to Florida, and a New York manufacturer is shipping his ice cream to Cuba.

The convenient refrigerated store display box, butter shipping cartons, (in which 5 lb. of dry ice keep 60 lb. of butter in good condition for 24 hours), fish cartons for fresh fillets, meat barrels, fruit shipments—all are every day accomplishments in the use of this product.

### Future Uses

In the refrigeration of cars, investigations of present difficulties inherent in various methods, as well as tests made with dry ice, lead one to believe this a field peculiarly well suited to dry-ice refrigeration. In tests that have been run during the last year the methods employed were such that less than a ton of dry-ice held a car of meat below  $35^\circ \text{F}$ . for 6 days. The saving in space and weight within the car, the easier control of temperature, and the more even distribution of refrigeration—even up to the ceiling of the car—coupled with the saving in time of re-icing and in car maintenance

due to eliminating water ice drippage, make dry ice a real factor to be considered.

Truck refrigeration is another field that is modern, and growing rapidly. Dry ice has been used for trucks for about two years. In the shipment of meat and fruits it has been found that in addition to its other advantages, the carbon dioxide gas surrounding the product tends to prevent rot and mold; this is likely to be a most beneficial by-product.

Another future field is in connection with the growing trend towards frozen, rather than canned, products. Fish, game, and poultry are now being shipped frozen, soon probably to be followed by shrimp and other delicate sea foods. Most of these should remain frozen until they reach the consumer's hands.

Dry ice is the modern "mobile" refrigerant—the refrigerant for perishables that must be moved. Through the discovery of how to apply it, this product has, in the last few years, been brought from the physics lecture table to be a staple article of commerce. Its output has grown enormously. Starting as a useful servant to the ice cream business, it is spreading rapidly into the fish, meat, and fruit shipping fields.

### Discussion

John E. Starr was the first one to comment on this paper. He believes that the question of dry ice refrigeration on as large a scale as railway car work is rather remote, but stated that he thought the author had clearly indicated the other uses; namely, wherever the saving in the cost of the entire operation (freight, handling, shipment, convenience) exceeds the cost of refrigeration itself.

Where a definite amount of refrigeration is expected, he had been unable to understand how a substance which has about twice the thermal value of ice could be used to take the place of any other method of refrigeration, commercially. This would apply to any class of refrigeration outside of the special ones which he mentioned, where the collateral expenses of the total operation are not in excess of the cost of refrigeration even when the extra insulation of the gas is considered.

Answering a request by C. R. Neeson for data on the cost F. O. B. factory for 100 lb., Mr. Martin quoted a base price per pound F. O. B. factory which is about 10 times the retail price of ice.

Referring to the insulating value of the gas itself A. J. Wood told of experiments recently conducted by him, which called attention to another factor:—the insulating effect of the gas in backing up the heat in a

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## St. Louis Quarryman's Association Holds Annual Banquet

The St. Louis Quarrymen's Association is certainly to be congratulated on the success of the excellent banquet held under their auspices at the Jefferson Hotel, St. Louis, on Friday evening, April 20.

The gathering, which not only broke all previous records for attendance with a total in excess of eighty, was also an unusually representative one, including many engineers from the City Hall, representing the major departments of the City Government; a number of engineers and street commissioners from nearby Missouri counties and suburban cities, and also several engineers from Illinois cities across the Mississippi River. The National Crushed Stone Association was represented by President Otho M. Graves, Mr. Goldbeck, Director of the Bureau of Engineering, and Mr. Boyd, Secretary. In addition to the engineers and various highway officials, there were present a large number of quarrymen representing sixteen different companies which operate in the aggregate twenty-five quarries in and adjacent to St. Louis.

Immediately after the conclusion of the dinner, the ceremonies were formally opened by William Eyermann, President of the St. Louis Quarrymen's Association, who, in a short talk, extended on behalf of the St. Louis group a most hearty welcome to all present, concluding his remarks by introducing as toastmaster for the evening, Col. E. J. McMahon, Executive Secretary of the St. Louis Association.

Col. McMahon, on the occasion of last year's banquet, established for himself an enviable reputation by his grace and courtesy and ready wit in handling the difficult task of toastmaster, and suffice it to say that his reputation has in no way been impaired by the commendable manner in which he served in this capacity again this year.

After supplementing President Eyermann's words of welcome, Col. McMahon introduced as the first speaker of the evening, John H. Brod, Director of Public Safety of the City of St. Louis. Mr. Brod, who is himself a quarry owner, gave a short but exceedingly entertaining talk. Following Mr. Brod, Judge James F. Gardner of the St. Louis County Court was called upon for a few words.

Col. McMahon next introduced Otho M. Graves, President of the National Crushed Stone Association.

Mr. Graves, with his characteristic eloquence of speech and graciousness of manner, gave an unusually inspiring address, with particular emphasis, made doubly convincing by illustrations from his personal experiences, on the need of a more complete understanding of the mutual problems confronting producer and user alike if cooperative effort in behalf of the common good is to be successful.

Following Mr. Graves, A. T. Goldbeck, Director of the Bureau of Engineering of the National Association, presented an exceedingly interesting and instructive blackboard talk relative to the design of concrete roads with particular emphasis on the suitability of the cross-bending test for determining the characteristics of aggregates for use in concrete road construction. Mr. Goldbeck's talk undoubtedly made a deep impression upon the engineers and highway officials present, as evidenced by the large number of questions asked him at the conclusion of the meeting.

Others seated at the speakers' table included W. W. Horner, City Engineer, St. Louis; Roy Jablonsky, County Engineer, St. Louis County; W. F. Wise, President, Southwestern Division, National Crushed Stone Association; N. C. Rockwood, Editor, Rock Products, and J. R. Boyd, Secretary, National Crushed Stone Association.

Preceding the annual banquet there was held during the afternoon a business meeting of the St. Louis Quarrymen's Association, at which William Eyermann, President of the Association, presided.

Short talks were made by President Graves and Secretary Boyd of the National Association.

President Graves outlined briefly the work which the Association is engaged in with particular stress upon the new research testing laboratory being established by the Association about May first. He expressed his hope that the St. Louis group would find it possible to contribute more extensively to the laboratory fund than is at present the case.

Mr. Boyd urgently requested the cooperation of all present in bringing into the National Association all quarry operators in the St. Louis territory who were not already members. He also suggested that a larger distribution of the Engineering Bulletins of the Asso-

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## The Crushed Stone Journal

J. R. BOYD, Editor

A. T. GOLDBECK, Director, Bureau of Engineering

**The National Crushed Stone Association**

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Easton, Pa.

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\*Deceased.

## Safety Banquets

To effectively promote accident prevention, the whole-hearted and enthusiastic cooperation of every individual of an organization, from executives on down the line, is vitally necessary. It is sometimes a question as to how best to instill in the personnel an interest in accident prevention. Of course we are all more or less interested in a general way in the prevention of accidents; at least to the extent that we are sorry to hear of an accident befalling any of our friends or fellow employees. But such a desultory interest is of little benefit in bringing safety campaigns to a successful conclusion. It is necessary to awaken a safety consciousness in each individual of the organization.

Definite steps along this line have recently been taken by the John T. Dyer Quarry Company, of Norristown, Pennsylvania, which instituted an annual safety banquet, to be held in the early part of each year.

Representatives of each of their three plants, composing safety committees, will meet at that time with the executives of the organization to discuss and formulate plans for accident prevention for the ensuing year. This procedure appeals to us as a most excellent one. In addition to promoting friendliness and cooperation between the organization personnel, a meeting of this nature serves to focus attention on the objective of accident prevention and should do much to stimulate interest in and increase the effectiveness of accident prevention campaigns.

The John T. Dyer Quarry Company is to be most heartily congratulated for making such an auspicious

start in their 1928 Safety Campaign. By continuing this good work they should be very strong contenders for the National Crushed Stone Association Safety Trophy.

## Pennsylvania Producers Contribute to Laboratory Fund

The Western Pennsylvania Stone Producers Association at its meeting held at the William Penn Hotel, Pittsburgh, on April 6, voted to contribute the sum of \$3,000 to the fund for the establishment of a research testing laboratory in Washington.

This generous support on the part of the Pennsylvania producers is most gratifying, giving evidence, as it does, of their belief in the necessity and value of the Association's engaging in technical research for the purpose of learning the facts in connection with the use and production of crushed stone.

This \$3,000 contribution from the Pennsylvania producers brings the amount so far pledged to the laboratory fund to the gratifying total of approximately \$21,000 and as announced elsewhere in this issue, it is expected that the laboratory will be officially opened about May first.

## Caring for Injured Workers

According to a recent announcement, the National Safety Council has just issued a new safety practices pamphlet entitled, "Caring for Injured Workers." This pamphlet should prove a valuable addition to the first-aid equipment of all crushed stone plants. Unquestionably many accidents which have subsequently proven of a serious nature might have been prevented from so developing if quick and effective first-aid treatment had been applied at the time of the accident. Requests for these pamphlets should be directed to the National Safety Council, 108 East Ohio Street, Chicago, Illinois.

## Federal Aid for Rural Roads Approved

The House Committee on Roads on April 12, reported out a bill (H. R. 383) introduced by Representative Dowell, (Rep.), of Des Moines, Iowa, Chairman, providing for appropriations of \$150,000,000 for Federal aid in the construction of rural post roads, and \$15,000,000 for Federal aid for forest roads and trails.

For the rural post roads \$75,000,000 would be available for the fiscal year ending June 30, 1931. For forest roads and trails \$7,500,000 would be available for the fiscal year ending June 30, 1930, and \$7,500,000 for the fiscal year ending June 30, 1931.

## C. N. Conner Appointed Chief Engineer of A. R. B. A.

The American Road Builders' Association announces that Mr. C. N. Conner, of the Highway Research Board, has been retained as Chief Engineer of the Association.

The Association is to be congratulated upon securing the services of Mr. Conner, who has had wide experience as a road builder and exceptional experience as a committee worker. He has recently been chairman of the committee on Low Cost Improved Roads, operating under the Highway Research Board. Mr. Conner was graduated from Tufts College in 1908. For three years he worked as engineer in railroad construction, and later was assistant engineer with the Bureau of Public Roads in the Philippine Islands. His next position was assistant engineer with the War Department and then with the Navy Department. He then became assistant engineer with the Delaware State Highway Department, and after that was State Construction Engineer for the North Carolina Highway Commission, where he was also head of the testing and research laboratory for a brief period. During 1925 and 1926 Mr. Conner was chief engineer of the Mexican Federal Highway Commission. He is a member of several technical organizations and author of many articles which have appeared in technical publications.

Mr. Conner's work for the present will consist of coordinating the activities of the committees of the several divisions and arranging for the committee reports which will constitute the program of the next convention. The County Highway Officials' Division, the Highway Contractors' Division and the City Officials' Division will operate through committees and their reports form the basis of the program for the next convention.

The American Road Builders' Association will organize in addition to its present committees several committees that will deal with problems of national interest. The program for the 1929 convention of the Association will consist essentially of reports of the chairmen of the various standards committees. These reports will represent the work of the committees during the entire year, and every effort will be made to present them in a manner that is clear, interesting and concise.

The retaining of Mr. Conner as chief engineer of the Association marks another step in the development and usefulness of the Association.

## The Field of Dry Ice in Modern Refrigeration

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permeable insulator (after that gas has been given off and passed into or through a permeable insulation).

In the tests a permeable insulation, ten in. sq., was placed at the bottom of a well insulated tin box. By its side was a similar box with a similar insulator, but in which the gas was not allowed to go down through the permeable insulation, while in the case of the other, it was prevented from passing through. Dry ice was placed in each box and careful observations revealed that there was what was termed "counterflow" effect of heat, due to the continual generation of the gas backing up the heat in the permeable insulation.

Continuing, Mr. Wood commented on the author's reference to the causes of the remarkable efficiency obtained, wherein he had stated that in cases where there is a temperature of  $-114^{\circ}$  F. concentrated at one point, the difference between that temperature and the temperature of the substance that is ordinarily kept at a low temperature (such as ice cream) is so much greater than the temperature difference which could be obtained by ice and salt, that the rate of transfer is much more rapid. Mr. Wood's point was, that if a rapid rate of transfer can be obtained and the insulating effect secured with a gas that is heavier than air passing down the outside of the can, conditions have been combined to give an efficient heat transfer and a good insulator.

J. C. Goosmann spoke briefly in the same terms, attributing the effectiveness of solid carbon dioxide to something beyond its heat of fusion. He pointed out that the low conductivity of the gas makes for this effectiveness.

Mr. J. B. Churchill told of an experiment of his, in which he sent three quarts of ice cream packed in a paper package with dry ice to Portland, Ore. The package weighed 60 lb. and lost 22 lb. in weight. The data were not absolutely accurate, but it was shown that a much greater amount of refrigeration would have been required than was shown by the melting of the 22 lb. of dry ice on the trip. The ice cream arrived like blocks of cement; it took about 10 hours to thaw it out so that it could be eaten.

Mr. C. R. Neeson asked the author how perishable goods, such as fruit, could be kept from freezing during the process of shipping. In reply Mr. Martin stated that the best way in which that problem has been worked out is to insulate the dry ice by very simple insulation made possible by its dryness. This insulation can be procured by merely wrapping it in paper.

Adding to this, Mr. Starr said that he had made a run with dry ice as compared with water ice in the refrigerator some 22 or 23 years ago, and had no difficulty in keeping the refrigerator at the higher temperature by simply insulating the snow.

The author added the following remarks in writing: When dry ice is used in exactly the same way that water ice is commonly used, it will have about twice the refrigerating effect of water ice. But to use it in this way is wrong. If properly used, so as to take advantage of its peculiar qualities, a pound of dry ice will apparently do the work of fifteen or sixteen pounds of ice. It is not correct to compare the two solids on the basis of heat absorbing value alone, but rather to compare the weights of the two that will attain the same result.

## St. Louis Quarryman's Association Holds Annual Banquet

(Continued from page 13)

ciation be made with particular reference to Bulletins Nos. 4 and 5.

In closing the meeting President Eyermann stated that thoughtful consideration would be given to these suggestions.

The following quarries participated in the meeting and banquet:

Bambrick Brothers Construction Co., Big Ben Quarry Co., T. E. Cavanaugh, Columbia Quarry Co., Electric Limestone Co., Eyermann Construction Co., Fehlig Construction Co., Hoffmann Brothers Construction Co., Mutual Quarry Co., Pilot Knob Ore Co., Rock Hill Quarry & Construction Co., James Rothwell, Steffan and Brothers, Casper Stolle Quarry & Construction Co., Tower Grove Quarry & Construction Co., Union Quarry & Construction Co.

# CHIPS

## Cold Fact

Goldstein: "Wherever in the world you go, you'll find us Jews are the leading people."

O'Sullivan: "How about Alaska?"

Goldstein: "Vell, Iceberg ain't no Presbyterian name."—New Mexico Highway Journal.

## Big Game

The Preacher—I had a very enjoyable trip to the Adirondacks. The first day I shot two bucks.

Mr. Sport (absently)—Win anything, parson?

—Judge.

He—"When you told your father that I didn't smoke, drink, gamble or swear, what did he say?"

She—"Oh, he said he didn't want me to marry a perfect man, but that you were such a good liar that you'd do."—Boston Transcript.

## A Rasp

"What's good for my wife's fallen arches?"

"Rubber heels."

"What shall I rub 'em with?"

—Texas Highway Bulletin.

## Courtesy

A haughty lady had just purchased a postage stamp at a sub-station.

"Must I stick it on, myself?" she asked.

"Positively, not, madam," replied the clerk. "It will accomplish more if you stick it on the letter."

—Texas Highway Bulletin.

## Don't Read This

I s'pose some nosey, meddling,

Unbelieving bloke,

Will read this little stanza,

Looking for a joke;

Well, now, inquisitiveness

Made you read it through—

You wouldn't heed a warning,

So the joke's on you.

—The Leatherneck.

## Of An Inquiring Disposition

The natural history teacher talking to a very wide-eyed class of the very young said, "And just think about a dolphin's family! A single dolphin will have a thousand baby dolphins!"

"And how many will a married one have?" asked the bright little girl at the head of the class

—Arkansas Highways.

## He Was Cool

A few minutes after an alarm of fire was given in a hotel a guest joined the group that was watching the fire and chaffed them on the apparent excitement. "There was nothing to be excited about," he said. "I took my time about dressing, lighted a cigaret, didn't like the knot in my necktie, so tied it over again—that's how cool I was." "Fine," one of his friends remarked, "but why didn't you put on your trousers?"

—Book of Smiles.

